L9: Entry 5 of 13 File: USPT Dec 7, 1999

DOCUMENT-IDENTIFIER: US 5998588 A
** See image for Certificate of Correction **
TITLE: Interactive molecular conjugates

Brief Summary Text (7):
There is a pressing need in the medical and processing industries for cost-effective isolation and delivery of therapeutic interactive molecules, rapid diagnostic strategies for preventive care, controlled and targeted delivery of therapeutic molecules, bioresponsive and biocompatible materials and careful control of enzyme-based processes. Similarly, cost-effective separations and diagnostic technologies are needed in the food, agriculture and marine industries, and for environmental testing and remediation.

Brief Summary Text (9):
It is a further object of the present invention to provide methods for making and using these materials for processing, pharmaceutical and medical applications, and other technologies involving molecular binding.

Detailed Description Text (12):
Stimuli-responsive oligomers and polymers useful in the conjugates described herein can be synthesized that range in molecular weight from about 1,000 to 30,000 Daltons, with a reactive group at one or both chain ends. In a preferred embodiment, these syntheses are based on the chain transfer-initiated free radical polymerization of vinyl-type monomers, as described herein, and by (1) Tanaka, T., "Gels", Sci. Amer., 244, 124-138 (1981); 2) Osada, Y. and S. B. Ross-Murphy, "Intelligent Gels", Sci. Amer., 268, 82-87 (1993); (3) Hoffman, A. S., "Intelligent Polymers in Medicine and Biotechnology", Artif. Organs, 19, 458-467 (1995); also Macromol. Symp., 98, 645-664 (1995); (4) Feijen, J., I. Feil, F. J. van der Gaag, Y. H. Bae and S. W. Kim, "Thermosensitive Polymers and Hydrogels Based on N-isopropylacrylamide", 11th European Conf. on Biomtls., 256-260 (1994); (5) Monji, N. and A. S. Hoffman, "A Novel Immunoassay System and Bioseparation Process Based on Thermal Phase Separating Polymers", Appl. Biochem. and Biotech., 14, 107-120 (1987); (6) Fujimura, M., T. Mori and T. Tosa, "Preparation and Properties of Soluble-Insoluble Immobilized Proteases", Biotech. Bioeng., 29, 747-752 (1987); (7) Nguyen, A. L. and J. H. T. Luong, "Synthesis and Applications of Water-Soluble Reactive Polymers for Purification and Immobilization of Biomolecules", Biotech. Bioeng., 34, 1186-1190 (1989); (8) Taniguchi, M., M. Kobayahi and M. Fujii, "Properties of a Reversible Soluble-Insoluble Cellulase and Its Application to Repeated Hydrolysis of Crystalline Cellulose", Biotech. Bioeng., 34, 1092-1097 (1989); (9) Monji, N., C-A. Cole, M. Tam, L. Goldstein, R. C. Nowinski and A. S. Hoffman, "Application of a Thermally-Reversible Polymer-Antibody Conjugate in a Novel Membrane-Based Immunoassay", Biochem. and Biophys. Res. Comm., 172, 652-660 (1990); (10) Monji, N. C. A. Cole, and A. S. Hoffman, "Activated, N-Substituted Acrylamide Polymers for Antibody Coupling: Application to a Novel Membrane-Based Immunoassay", J. Biomtls. Sci. Polymer Ed., 5, 407-420 (1994); (11) Chen, J. P. and A. S. Hoffman, "Polymer-Protein Conjugates: Affinity Precipitation of Human IgG by Poly(N-Isopropyl Acrylamide)-Protein A Conjugates", Biomtls., 11, 631-634 (1990); (12) Park, T. G. and A. S. Hoffman, "Synthesis and Characterization of a Soluble, Temperature-Sensitive Polymer-Conjugated Enzyme, J. Biomtls. Sci. Polymer Ed., 4,.493-504 (1993); (13) Chen, G. H., and A. S. Hoffman, Preparation and Properties

of Thermo-Reversible, Phase-Separating Enzyme-Oligo(NIPAAm) Conjugates", Bioconj. Chem., 4, 509-514 (1993); (14) Ding, Z. L., G. H. Chen, and A. S. Hoffman, "Synthesis and Purification of Thermally-Sensitive Oligomer-Enzyme Conjugates of Poly(NIPAAm)-Trypsin", Bioconj. Chem., 7, 121-125 (1995); (15) Chen, G. H. and A. S. Hoffman, "A New Temperature- and pH-Responsive Copolymer for Possible Use in Protein Conjugation", Macromol. Chem. Phys., 196, 1251-1259 (1995); (16) Takei, Y. G., T. Aoki, K. Sanui, N. Ogata, T. Okano, and Y.Sakurai, "Temperature-responsive Bioconjugates. 1. Synthesis of Temperature-Responsive Oligomers with Reactive End Groups and their Coupling to Biomolecules", Bioconj. Chem., 4, 42-46 (1993); (17) Takei, Y. G., T. Aoki, K. Sanui, N. Ogata, T. Okano and Y. Sakurai, "Temperature-responsive Bioconjugates. 2. Molecular Design for Temperature-modulated Bioseparations", Bioconj. Chem., 4, 341-346 (1993); (18) Takei, Y. G., M. Matsukata, T. Aoki, K. Sanui, N. Ogata, A. Kikuchi, Y. Sakurai and T. Okano, "Temperature-responsive Bioconjugates. 3. Antibody-Poly(N-isopropylacrylamide) Conjugates for Temperature-Modulated Precipitations and Affinity Bioseparations", Bioconj. Chem., 5, 577-582 (1994); (19) Matsukata, M., Y. Takei, T. Aoki, K. Sanui, N. Ogata, Y. Sakurai and T. Okano, "Temperature Modulated Solubility-Activity Alterations for Poly(N-Isopropylacrylamide)-Lipase Conjugates", J. Biochem., 116, 682-686 (1994); (20) Chilkoti, A., G. H. Chen, P. S. Stayton and A. S. Hoffman, "Site-Specific Conjugation of a Temperature-Sensitive Polymer to a Genetically-Engineered Protein", Bioconj. Chem., 5, 504-507 (1994); and (21) Stayton, P. S., T. Shimoboji, C. Long, A. Chilkoti, G. Chen, J. M. Harris and A. S. Hoffman, "Control of Protein-Ligand Recognition Using a Stimuli-Responsive Polymer", Nature, 378, 472-474 (1995).

Detailed Description Text (82):
The uses of the stimulus-responsive component-directed affinity and partitioning switches for the interactive molecules are as numerous and diverse as the biotechnological, medical, laboratory, and industrial uses of the interactive molecules themselves. Thus, the stimulus-responsive component-interactive molecule conjugates are directly applicable to a wide variety of separations, sensors, diagnostics, bioprocesses, biointeractions, and drug delivery systems, and can also be applied to the design and application of new technologies, such as control of enzyme rate processes, stimuli-induced phase-separation immunoassays, regeneration/recycling of environmental sensors and biosensors, control of protein and cell interactions at foreign interfaces, and information storage, retrieval and signalling.

Other Reference Publication (27):
Fujimura, M., T. Mori and T. Tosa, "Preparation and Properties of Soluble-Insoluble Immobilized Proteases", Biotech. Bioeng., 29:747-752 (1987).

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L9: Entry 13 of 13 File: USPT Sep 23, 1986

DOCUMENT-IDENTIFIER: US 4613502 A
TITLE: Proteolytic, dry biopolymeric composition for treatment of wounds, and method of using same

Abstract Text (1):
The invention pertains to a cover of wounds in the form of a powder or a dry powdery fluid and is useful in covering and treating of ulcerous and necrotic wounds. It consists of animal or fungous chitin and chitosan in a powdered form of particle size 0.01 to 0.3 mm or of crosslinked dextran in the form of spheric particles of diameter 0.05 to 0.5 mm and of an immobilized protease. Enzymes are chemically bonded to the structure of the biopolymeric carrier and provide cleaning of the wound by dissolution of undesirable protein material, in particular fibrin, necrotic tissues, components of pus, and the like. In addition the adsorption and regeneration effects of powder act to provide suction of exudate and purulent matter infected with bacteria into interstitial capillary space. The cover according to the invention acts by fast cleaning of necrotic defects and speeds up the granulation and healing of the wound. The invention can be utilized in pharmaceutical production.

Brief Summary Text (5):
The proteolytic cover based on spherical cellusose with covalently bonded proteases and dried by lyophilization and its application in medical practice was described by J. Turkova et al. in the Czechoslovak Patent Application No. PV 7138-83.

Brief Summary Text (20):
Application of the new cover in medical practice is similar to that described in Czechoslovak Patent Application No. PV 7138-83.

CLAIMS:

1. A proteolytic, dry, biopolymeric composition for treatment of exudative wounds which comprises small substantially spherical particles of a polysaccharide from the group consisting of crosslinked dextran, chitin and chitosan having bonded thereto an immobilized protease enzyme in an amount sufficient to cause enzymatic decomposition of undesirable proteins in the wound exudate.

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L19: Entry 2 of 9 File: USPT Jun 10, 2003

DOCUMENT-IDENTIFIER: US 6575932 B1
TITLE: Adjustable multi-balloon local delivery device

Detailed Description Text (34):
The nucleotide sequences or constructs comprising nucleotide sequences to be introduced into the cells may encode endogenous proteins, or the nucleotide sequences introduced may encode transgenic proteins. Some examples of proteins which may be produced by such nucleotide sequences include but are not limited to vascular endothelial growth factor, and nitric oxide synthase. It is also contemplated that radioactive solutions or slurries, microspheres with covalently attached therapeutic agents, or radioisotopes may be administered via the infusion ports. Nucleotide sequences which transcribe antisense oligonucleotides of genes which encode specific cellular proteins may be used to downregulate the production of a specific protein.

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L19: Entry 6 of 9 File: USPT Jan 31, 1995

DOCUMENT-IDENTIFIER: US 5385940 A
TITLE: Treatment of stroke with nitric-oxide releasing compounds

Brief Summary Text (8):
The invention features a method for treating a stroke patient by administering nitric oxide (NO) or nitric oxide-releasing compounds to the patient. Nitric oxide-releasing compounds are compounds which react within a patient's body to cause the release of free nitric oxide. Nitric oxide-releasing compounds include NO donor compounds, wherein the nitrogen released as NO is derived from nitrogen formerly covalently bound within the NO donor compound. In one preferred embodiment of the invention, the nitric oxide-releasing compound is L-arginine. L-arginine is a precursor for nitric oxide synthase, which transforms arginine into NO and citrulline. (Palmer et al., Nature 333:664-666, 1988). Other NO-releasing compounds included within the scope of the invention include analogs of L-arginine which are substrates for NO synthase.

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L19: Entry 9 of 9 File: DWPI Dec 16, 1999

DERWENT-ACC-NO: 2000-160448
DERWENT-WEEK: 200413

TITLE: Multibinding compounds useful as inhibitors of nitric oxide synthases for treating e.g. chronic inflammation, arthritis and sepsis

Basic Abstract Text (2):
DETAILED DESCRIPTION - Multibinding compounds comprising 2-10 ligands covalently attached to one or more linkers in which each of the ligands comprises a moiety capable of binding a nitric oxide synthase, provided that the multibinding compound is not of formula (III) or (IV):

Basic Abstract Text (14):
(i) preparing a first collection or iteration of multimeric compounds which is prepared by contacting at least two stoichiometric equivalents of the ligand or mixture of ligands which target a nitric oxide synthase with a linker or mixture of linkers where the ligand or mixture of ligands comprises at least one reactive functionality and the linker or mixture of linkers comprises at least two functional groups having complementary reactivity to at least one of the reactive functional groups of the ligand where the contacting is conducted under conditions where the complementary functional groups react to form a covalent linkage between the linker and at least two of the ligands;

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WEST Search History

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DATE: Thursday, October 21, 2004

Hide?	Set Name	Query	Hit Count
		DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR	
☐	L20	(nitric adj2 synthase) same (catheter or stent)	27
☐	L19	(nitric adj2 synthase) same (immobiliz$ or covalent$)	9
☐	L18	(nitric adj2 synthase)	2280
☐	L17	covalent$ adj5 (nitric adj2 synthase)	0
☐	L16	covalent$ adj5 (nitric adj2 synthetase)	0
☐	L15	immobilize$ adj5 (nitric adj2 synthetase)	0
☐	L14	L7 and (nitric adj2 synthetase)	0
☐	L13	(nitric adj2 synthetase)	282
☐	L12	(nitric adj1 synthetase)	1
☐	L11	L7 and (nitric adj1 synthetase)	0
☐	L10	L7 and implant$	3
☐	L9	L7 and medical	13
☐	L8	L7 and stent	0
☐	L7	immobilize$ adj1 (protease or glycosidase)	102
☐	L6	immobilize$ adj5 (protease or glycosidase)	239
☐	L5	covalent$ adj5 (protease or glycosidase)	113
☐	L4	sepharose adj5 (protease or glycosidase)	43
☐	L3	L2 and covalent$	71
☐	L2	(affinity adj1 chromatography) same enzyme same protease	179
☐	L1	(affinity adj1 chromatography) same enzyme	3561

END OF SEARCH HISTORY

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L22: Entry 3 of 3 File: USPT Feb 27, 2001

DOCUMENT-IDENTIFIER: US 6193969 B1
TITLE: Antibody fragments in therapy

Brief Summary Text (5):
The development of the septic shock syndrome involves initiators (such as LPS), mediators (including TNF.alpha.; IL-1 and IL-6) and effectors at the cellular level (eg nitric oxide synthase in endothelial cells). An the initiators and mediators are potential antigens; antibodies against these macromolecules can be used for the prevention and treatment of septic shock. Several groups have used polyclonal (PcAb) or monoclonal antibodies (McAb) directed against LPS with varying degrees of success. At the same time, it has been shown that PcAb to TNF.alpha. can prevent the lethal effects of this cytokine (Beutler et al (1985) Science 229, 869-871) in BALB/C mice. Tracey and colleagues ((1987) Nature 330, 662-664) have shown that McAb against TNF.alpha. given one hour before bacterial challenge in baboons afforded partial protection against organ damage and, when given two hours before, more complete protection. In other words the anti-TNF.alpha. McAb was used prophylactically.

Detailed Description Text (132):
The enzyme matrix is added to the IgG preparation in the presence of the reducing agent cysteine and EDTA (to preserve enzyme activity) and digestion allowed to progress for 24 h at 37.degree. C. After this time the reaction is terminated by centrifugation of the mixture which removes both the immobilised enzyme from solution and the need to add large amounts of iodoacetamide blocking agent. The solution is then ultrafiltered across a 10 kD polysulphone ultrafilter (incorporating a 0.45 .mu.m glass fibre prefilter) and washed with 10 volumes of saline (0.9%, sterile, apyrogenic) to remove all traces cysteine, EDTA and any Fc fragments. Washing procedures ensure salt contamination levels of below 2 ppm.

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WEST Search History

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DATE: Thursday, October 21, 2004

Hide?	Set Name	Query	Hit Count
		DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR	
☐	L23	L21 and (nitric adj2 synthetase)	0
☐	L22	L21 and (nitric adj2 synthase)	3
☐	L21	immobilized adj1 enzyme	5481
☐	L20	(nitric adj2 synthase) same (catheter or stent)	27
☐	L19	(nitric adj2 synthase) same (immobiliz$ or covalent$)	9
☐	L18	(nitric adj2 synthase)	2280
☐	L17	covalent$ adj5 (nitric adj2 synthase)	0
☐	L16	covalent$ adj5 (nitric adj2 synthetase)	0
☐	L15	immobilize$ adj5 (nitric adj2 synthetase)	0
☐	L14	L7 and (nitric adj2 synthetase)	0
☐	L13	(nitric adj2 synthetase)	282
☐	L12	(nitric adj1 synthetase)	1
☐	L11	L7 and (nitric adj1 synthetase)	0
☐	L10	L7 and implant$	3
☐	L9	L7 and medical	13
☐	L8	L7 and stent	0
☐	L7	immobilize$ adj1 (protease or glycosidase)	102
☐	L6	immobilize$ adj5 (protease or glycosidase)	239
☐	L5	covalent$ adj5 (protease or glycosidase)	113
☐	L4	sepharose adj5 (protease or glycosidase)	43
☐	L3	L2 and covalent$	71
☐	L2	(affinity adj1 chromatography) same enzyme same protease	179
☐	L1	(affinity adj1 chromatography) same enzyme	3561

END OF SEARCH HISTORY

L2: Entry 3 of 62 File: USPT May 4, 2004

DOCUMENT-IDENTIFIER: US 6730144 B2
TITLE: Air purifying filter using modified enzymes

Detailed Description Text (136):
Of course, the percentage immobilization calculated is based on the use of a 1 wt. % .beta.-1,3-glucanase substituted acetyl cellulose bromide solution and is expected to vary based on variables, such as the immersion time and the strength of the solution. Thus, the actual amount of immobilized enzyme on the carrier can be expected to be increased or reduced based on these variables. In fact, experiments have shown that, with a constant immersion time, at least 99% immobilization is achieved when the solution has a concentration of approximately 1% or more of the immobilized enzyme. Thus, a theoretical maximum appears to be attained at a concentration of approximately 1% modified enzyme.

Detailed Description Text (174):
The resulting air purifying filter may be installed in an air handling system, such as any building air handling system, including an office building; in a personal use air filter; in a semiconductor-related or hospital-related facility, in a biologic, medical device, pharmaceutical, and/or cosmetic manufacturing facility, and/or in a postal or other correspondence handling facility. Passing air through the air purifying filter can purify the air of one or more of Staphylococcus, including S. aureus and S. epidermidis; Micrococcus, including M. luteus; Streptococcus, including S. pyogenes; Bacillus, including B. subtilis, B. cereus, and B. anthracis; Clostridium, including C. botulinum and C. tetani; Lactobacillus, including L. burugaricus; Corynebacterium, including C. diphtheriae; and Mycobacterium, including M. bovis and M. tuberculosis.

L2: Entry 4 of 62 File: USPT Mar 9, 2004

DOCUMENT-IDENTIFIER: US 6702857 B2
TITLE: Membrane for use with implantable devices

Brief Summary Text (6):
Some medical devices, including implanted analyte sensors, drug delivery devices and cell transplantation devices require transport of solutes across the device-tissue interface for proper function. These devices generally include a membrane, herein referred to as a cell-impermeable membrane that encases the device or a portion of the device to prevent access by host inflammatory or immune cells to sensitive regions of the device.

Detailed Description Text (10):
The sensor interface region refers to the region of a monitoring device responsible for the detection of a particular analyte. For example, in some embodiments of a glucose-monitoring device, the sensor interface refers to that region where a biological sample contacts (directly or after passage through one or more membranes or layers) an enzyme (e.g., glucose oxidase). The sensor interface region may include a biointerface membrane according to the present invention having different domains and/or layers that can cover and protect an underlying enzyme membrane and the electrodes of an implantable analyte-measuring device. In general, the biointerface membranes of the present invention prevent direct contact of the biological fluid sample with the sensor. The membranes only permit selected substances (e.g., analytes) of the fluid to pass therethrough for reaction in the immobilized enzyme domain. The biointerface membranes of the present invention are biostable and prevent barrier cell formation. The characteristics of this biointerface membrane are now discussed in more detail.

L2: Entry 6 of 62 File: USPT Sep 30, 2003

DOCUMENT-IDENTIFIER: US 6627058 B1
TITLE: Thick film conductor composition for use in biosensors

Brief Summary Text (2):
This invention relates to an improvement in polymer thick film (PTF) compositions containing platinum group metal catalysts, a catalyst enhancing additive, graphite or conductive carbon fillers, and a thermoplastic binder. The improved PTF conductor compositions can be used in printing sensing/working electrodes for electrochemical biosensors based on hydrogen peroxide detection. Electrochemical biosensors, which are combinations of an electrochemical sensor and a biomolecule recognition element are useful in the analysis of biological analytes such as glucose, cholesterol, creatinine, alcohol, uric acid, and lactate in body fluid, and are therefore useful in the field of medical devices and analytical instruments for medical diagnostics.

Brief Summary Text (5):
U.S. Pat. No. 3,539,455 (1970) by Clark discloses a platinum based glucose sensor useful for determination of blood glucose in diabetics. Guilbault and Lubrano (1973) reported amperometric biosensors having platinum electrodes with an immobilized-enzyme suitable for glucose sensor applications. Mizutani et al. (1992) reported a platinum/carbon paste (CP) composition with a 1/9 Pt/C ratio suitable for making glucose sensors. U.S. Pat. No. 4,970,145 (1990) to Bennetto et al. discloses a biosensor with a porous enzyme electrode comprising platinized carbon paper having a fluoropolymer binder. These platinum/carbon-based biosensors have sensitivity for detection of glucose only at concentrations of millimolar (mM) glucose with an electric current response of <20 .mu.A/cm.sup.2.multidot.mM glucose. U.S. Pat. No. 5,160,416 (1992) to Mullen et al. discloses an enzyme electrode produced by coating a water based suspension consisting of platinized carbon or graphite particles and enzyme. U.S. Pat. No. 5,616,222 (1997) to Maley et al. discloses a sensor working electrode comprising platinized carbon particles, enzyme, protein, and polymer binder. These enzyme-containing compositions require the coating be done at temperature well below the enzyme deactivation temperature, typically below 60.degree. C., and are not suitable for high throughput sensor manufacturing processes. Furthermore, these enzyme electrodes have high metal loading, typically 5-15% Pt by weight of total carbon/graphite. A working electrode with high loading of platinum group metal can lead to high material cost and unacceptably high loss of hydrogen peroxide due to metal-catalyzed decomposition of hydrogen peroxide. Patent Application WO 98/20331 disclosed ink compositions useful for printing a working electrode comprised of platinum group metal catalyst deposited on graphite and carbon black filler in a cross-linked bonded matrix. A printing ink based on a thermoset polymeric binder would require long curing time to form a cross-linked matrix, and therefore making it unsuitable for low cost high throughput sensor fabrication processes. For single-use disposable biosensors, it is critical that catalyst printing ink for the working electrode be low cost and suitable for low cost and high throughput sensor fabrication processes.

L2: Entry 11 of 62 File: USPT Feb 4, 2003

DOCUMENT-IDENTIFIER: US 6514734 B1
TITLE: Polybifunctional reagent having a polymeric backbone and latent reactive moieties and bioactive groups

Brief Summary Text (7):
An alternative approach involves adding bioactive groups to the surfaces of biomaterials, e.g., after they have been fabricated into medical devices. Such bioactive groups can occasionally be added by adsorption. However, groups that have been added by adsorption cannot typically be retained on surfaces at high levels or for long periods of time.

Brief Summary Text (47):
Yet other desirable bioactive groups present in the invention include enzymes that can bind to and catalyze specific changes in substrate molecules present in aqueous media that comes into contact with the immobilized enzymes. Other desirable bioactive groups consist of nucleic acid sequences (e.g., DNA, RNA, and cDNA), which selectively bind complimentary nucleic acid sequences. Surfaces coated with specific nucleic acid sequences are used in diagnostic assays to identify the presence of complimentary nucleic acid sequences in test samples.

L2: Entry 12 of 62 File: USPT Jan 28, 2003

DOCUMENT-IDENTIFIER: US 6512939 B1
**** See image for Certificate of Correction ****
TITLE: Implantable enzyme-based monitoring systems adapted for long term use

Brief Summary Text (7):
The sensor assembly employed in many enzyme-based glucose monitoring systems has three basic components: an electrode assembly; an immobilized enzyme (glucose oxidase); and one or more membranes isolating these parts from one another and from the sample to be measured. See, for example, U.S. Pat. No. 4,890,620, Gough, David, issued Jan. 2, 1990; U.S. Pat. No. 4,671,288, Gough, David, issued Jan. 9, 1987; and Fischer and Abel, "A Membrane Combination for Implantable Glucose Sensors. Measurements in Undiluted Biological Fluids", Trans. Am. Soc. Artif. Intern. Organs, 28: 245-248 (1982), each of which is hereby incorporated by reference, in its entirety. In arranging these components, the electrode assembly may either be in direct contact with the immobilized enzyme or it may be, and preferably is, separated therefrom by a membrane. The enzyme is normally immobilized by being associated with a hydrophilic gelatinous layer composed, for example, of polyacrylamide gels, glutaraldehyde-cross-linked proteins or polyhydroxyethyl-methacrylate (PHEMA). Directly adjacent the immobilized enzyme is a hydrophobic membrane, impermeable to glucose. When contacted with the sample to be measured, oxygen diffuses into the hydrophobic outer layer and the gelatinous enzyme layer and glucose diffuses only into the gelatinous enzyme layer, thereby preventing a deficit of oxygen, which could result in an inaccurate measurement of the glucose concentration.

Brief Summary Text (8):
Two particular areas of weakness in this sensor assembly configuration, that contribute to the short life of the implantable enzyme-based glucose monitoring systems, are the finite life of the solid, immobilized enzyme layer and the finite life of the electrode assembly. Once the enzyme layer is either expended by the enzymatic reaction or inactivated by prolonged exposure to body temperatures, the entire monitoring system must be explanted and replaced. Similarly, if the electrode assembly contained within the sensor assembly ceases to function properly, for example due to pH changes at the active surface of the electrodes which may be caused by corrosion of the electrodes, again, the entire monitoring system must be replaced. Further, before the electrode assembly completely wears out, the monitoring system may require frequent recalibration to account for the assembly's deterioration. Presently, the maximum life expectancy of such monitoring systems is approximately 18 to 24 months, with recalibration required every three to six months, meaning that every couple of years, the patient must undergo surgery to remove and replace the implanted monitoring system.

Brief Summary Text (10):
Thus, what is needed are implantable monitoring systems that may remain implanted for long periods of time and that provide reliable, accurate measurements over that period of time with infrequent or no recalibrations required. Further, the monitoring system should remain as small as possible in order to maximize its usefulness as an implantable medical device.

Detailed Description Text (10):

As used herein, the term microprocessor assembly refers to the microprocessor chip and associated microelectronics that are affixed to the same substrate as the electrode assembly and that function, at least, to receive and process data from the electrodes. Such microprocessor assemblies are described in detail in the following co-pending applications: "Low Power Rectifier Circuit for Implantable Medical Device," U.S. Ser. No. 08/928,871, now U.S. Pat. No. 5,999,849, issued Dec. 7, 1999; "Low Power Current to Frequency Converter Circuit for Use in Implantable Sensors," U.S. Ser. No. 08/928,868, now U.S. Pat. No. 5,917,346, issued Jun. 29, 1999; and "Daisy-Chainable Sensors and Stimulators for Implantation in Living Tissue," U.S. Ser. No. 08/928,867, now U.S. Pat. No. 5,999,848, issued Dec. 7, 1999, each of which is incorporated herein in its entirety.

Detailed Description Text (16):
Turning now to FIG. 1, there is shown a side view of a preferred embodiment of the monitoring system in accordance with the present invention. Specifically, illustrated is an implantable enzyme-based glucose monitoring system according to the present in invention. The basic configuration of the monitoring system is a substrate 16 having electrodes 18, 20, 22, 24 bonded thereto, surrounded by a selectively permeable membrane 26 within which an electrolyte solution is contained, an enzyme located near a first working electrode, a selectively permeable membrane located near the remaining electrodes and a selectively permeable, biocompatible housing surrounding all. Also illustrated in FIG. 1 is the improved configuration of a microprocessor assembly 30 affixed to the same substrate as the electrode assembly. This is described further below and in the following co-pending applications: "Low Power Rectifier Circuit for Implantable Medical Device," U.S. Ser. No. 08/928,871, now U.S. Pat. No. 5,999,849, issued Dec. 7, 1999; "Low Power Current to Frequency Converter Circuit for Use in Implantable Sensors," U.S. Ser. No. 08/928,868, now U.S. Pat. No. 5,917,346, issued Jun. 29, 1999; and "Daisy-Chainable Sensors and Stimulators for Implantation in Living Tissue," U.S. Ser. No. 08/928,867, now U.S. Pat. No. 5,999,848, issued Dec. 7, 1999, each of which has previously been incorporated herein in its entirety. It will be appreciated by those of skill in the art that there are many specific configurations the monitoring system can possess, each of which are likewise contemplated herein.

Detailed Description Text (24):
As illustrated in FIG. 1, in this preferred embodiment, an enzyme chamber 36 is formed by the epoxy plug 40, located at the end of the elongated substrate 16 near the first working electrode 18; the hydrophobic oxygen permeable membrane means 34, filling the space between the first membrane means 26 over the remaining electrodes 20, 22, 24 and the housing 10; the first membrane means 26 over the first working electrode 18; and the housing 10 with opening 12 covered by membrane means 14. The enzyme is located within the enzyme chamber 36 and may be an immobilized enzyme solution, as known in the art, or may be a fluid enzyme solution, as described below, or both. Examples of immobilized enzyme solutions, particularly immobilized glucose oxidase solutions suitable for use in an implantable monitoring system, are described in U.S. Pat. No. 4,890,620, Gough, David; U.S. Pat. No. 4,671,288 Gough, David; U.S. Pat. No. 3,948,745, Guilbault, et al.; and U.S. Pat. No. 4,759,828 Young, et al., each of which is incorporated herein, in its entirety.

Detailed Description Text (25):
As stated above, in this preferred monitoring system embodiment, a microprocessor assembly is hermetically associated with the substrate. The microprocessor assembly comprises integrated circuits and microelectronics 30 used to process the electrical signals created at the electrodes and to process data received from the command center. The microprocessor assembly may be hermetically associated with the substrate by any of a number of known means by those of skill in the implantable medical device art. For example, the hermetic seal may be formed by braising a metal, such as stainless steel, lid or can 32 onto the substrate covering the microprocessor assembly. The can 32 may occupy nearly all of the space between the

substrate 16, the housing 10 and the plugs 38, 40. If such is the case, then a dimple (not shown) may be formed in the can to permit passage of the enzyme solution about the can.

Detailed Description Text (34):
As discussed briefly above, methods of immobilization of the enzyme solution within the enzyme chamber are well known in the art. For example, the enzyme may be contained within or associated with a gelatinous material, such as polyacrylamide gels, glutaraldehyde, cross-linked collagen or albumin, poly-hydroxyethylmethacrylate (PHEMA) and its derivative and other hydrophilic polymers and co-polymers. For the purposes herein, the term enzyme solution refers to gelatinous as well as fluid compounds comprising the enzyme of interest. Preferably, where a gelatinous enzyme is immobilized in the enzyme chamber, a fluid enzyme solution is contained within the enzyme reservoir and channels; thereby permitting the fluid enzyme solution to flow from the enzyme reservoir into the enzyme chamber as the gelatinous enzyme is expended.

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L2: Entry 16 of 62 File: USPT May 28, 2002

DOCUMENT-IDENTIFIER: US 6395299 B1
TITLE: Matrices for drug delivery and methods for making and using the same

Drawing Description Text (6):
FIG. 5: Yield of immobilized enzyme in penicillinase-containing sol-gel matrices (observed activity was calculated as the percentage of enzyme activity used in the preparation of the matrices).

Detailed Description Text (248):
Immobilized enzymes may be administered in a variety of ways. See generally Ming et al. Methods for Therapeutic Applications 46:676-699. The site of administration of the matrix may affect its therapeutic effect depending on the reaction center encapsulated therein. For example, the site of implantation of encapsulated PC12 cells for treatment of Parkinson's disease appears to affect the device output. Emerich et al. Cell Transplant. 5:589-96 (1996).

Detailed Description Text (251):
In other embodiments of the present invention, the matrices of the present invention may be associated with a medical article to be used as an implant. For example, matrices of the present invention could be attached as thin films to such devices. Alternatively, matrices of the present invention could be attached as a capsule or incorporated into any medical device. Exemplary structural medical articles include such implants as orthopedic fixation devices, ventricular shunts, laminates for degradable fabric, drug-carriers, burn dressings, coatings to be placed on other implant devices, and the like.

Other Reference Publication (52):
Klein and Langer; "Immobilized Enzymes in Clinical Medicine: An Emerging Approach to New Drug Therapies", TIBtech, 179-186 (Jul. 1986).

Other Reference Publication (110):
Chang, T.M. "Methods for the Therapeutic Applications of Immobilized Enzymes", Methods Enzymol., 44: 676-698 (1976).

L2: Entry 20 of 62 File: USPT Sep 18, 2001

DOCUMENT-IDENTIFIER: US 6291582 B1
**** See image for Certificate of Correction ****
TITLE: Polymer-protein composites and methods for their preparation and use

Brief Summary Text (6):
One approach to avoid these problems is to generate an extremely close association between the support and the biocatalyst. For example, immobilization of enzymes in hydrophilic or water-soluble polymers via polymerization in aqueous solution has been proposed and is described in the art. Such approaches have been used to prepare enzyme-containing hydrogels and other gel-like materials. Unfortunately, most of these materials are limited by the need to use highly water-soluble monomers or hydrophilic monomers, due to the solubility of enzymes that is generally limited to water and other polar solvents. For example, U.S. Pat. No. 4,727,030 to Fumihiro et al., describes the preparation of porous polyvinyl alcohol gel containing an immobilized enzyme. U.S. Pat. No. 4,371,612 describes immobilization of an enzyme via use of cross-linked microporous acrylonitrile polymers. U.S. Pat. No. 3,985,616 describes immobilization of an enzyme with gelatinized-starch-polyacrylonitrile graft polymers.

Detailed Description Text (7):
The polymer-protein composites can be used in paints. For example, the composites in a solid particle form, can be mixed and ground with pigment and other conventional additives for various paints used, for example, for automobile, building, medical devices, and furniture. Depending on the function of the protein used, the paint may have desired properties such as easy-cleanability, anti-bacterial affect, and/or self-degradability.

Detailed Description Text (52):
The resulting polymer was washed extensively by hexane, dried under vacuum, then washed by water until no observable protein fell out from the polymer. The final product was dried totally under vacuum and stored at 4.degree. C. Analysis showed that in the case of chymotrypsin, more than 60% of the enzyme remains active right after polymerization, and up to 30% of the originally added enzyme is available for catalytic reactions in the final product, as determined via elemental analysis and active site titration experiments. Measurements also showed that the activity of the immobilized enzyme is about 10% of the native enzyme for hydrolysis reactions in water, and up to more than 200 times higher than the native enzyme in toluene in terms of transesterification activity.

Detailed Description Text (67):
FIG. 7 demonstrates the activity of chymotrypsin-containing polymers of Example 1 in aqueous solutions. The observed activities (in terms of initial reaction rates) for the polymers are up to 10% of that for the free enzyme. Enzyme activity in aqueous solutions is expected to decrease upon the immobilization due to the introduction of the limitation from the polymer matrices on the contact between the enzyme and substrates. The advantages for using immobilized enzymes in aqueous solutions for biocatalysis involve simplified purification of the product and recovery of the enzyme catalyst, flexible reactor design, and improved enzyme stability, among others. The data shown here demonstrates that the current technology also leads to products suitable for applications in aqueous solution.

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L2: Entry 24 of 62 File: USPT Aug 21, 2001

DOCUMENT-IDENTIFIER: US 6277489 B1
TITLE: Support for high performance affinity chromatography and other uses

Detailed Description Text (86):
In a further preferred embodiment, R.sup.1 is a poly(ethyleneglycol) moiety. Polyethylene glycol (PEG) use in biotechnology and biomedical applications continues to expand and has been reviewed (POLY(ETHYLENE GLYCOL) CHEMISTRY. BIOTECHNICAL AND BIOMEDICAL APPLICATIONS, J. M. Harris, Ed., Plenum Press, New York, 1992). Modification of enzymes (Chiu el al., J. Bioconjugate Chem., 4: 290-295 (1993)), RGD peptides (Braatz et al., Bioconjugate Chem., 4: 262-267 (1993)), liposomes (Zalipsky, S. Bioconjugate Chem., 4: 296-299 (1993)), and CD4-IgG glycoprotein (Chamow et al., Bioconjugate Chem., 4: 133-140 (1993)) are some of the recent advances in the use of polyethylene glycol. The modification of toxicity, pharmacokinetics, biodistribution and other biofunctions are a number of the promising areas for the use of this simple polymer. Surfaces treated with PEG have been shown to resist protein deposition and have improved resistance to thrombogenicity when coated on blood contacting biomaterials (Merrill, "Poly (ethylene oxide) and Blood Contact: A Chronicle of One Laboratory," in POLY (ETHYLENE GLYCOL) CHEMISTRY: BIOTECHNICAL AND BIOMEDICAL APPLICATIONS, Harris, Ed., Plenum Press, New York, (1992), pp. 199-220). Accordingly, application of PEG based coatings to multilayered particulate materials would be very useful for chromatography, analytical and medical devices.

Detailed Description Text (198):
Of particular interest is the immobilization of enzymes such as hydrolases, isomerases, proteases, amylases, and the like. These immobilized enzymes can then be used in biochemical reactors, as is otherwise well known in the art. In still other preferred embodiments, these enzymes are immobilized onto magnetic particles of the invention to allow their separation from the synthesis milieau.

L2: Entry 27 of 62 File: USPT Jan 23, 2001

DOCUMENT-IDENTIFIER: US 6177282 B1
TITLE: Antigens embedded in thermoplastic

Brief Summary Text (41):
The present invention prepares an implant or other medical device contacting a host or host fluids, containing embedded binding agents which make the medical product, such as a vascular prosthesis, more biologically compatible to the recipient host.

Detailed Description Text (29):
Another embodiment of the present invention is to immobilize enzymes to a solid phase by incorporating the enzyme per se into the solid phase in the same manner as the binding agent was incorporated. Alternatively, an enzyme binding composition may be incorporated into the solid phase. Examples of enzyme binding compositions include, antibodies to the enzyme, enzyme adsorbents, enzyme substrates, inhibitors, coenzymes, vitamins and cofactors. Examples include biotin for binding to avidin/strepavidin, ATP and NAD(P)/NAD(P)H. The enzymes may be immobilized by chemical reaction to the solid phase bound enzyme binding composition through a separate reaction. The immobilized enzyme may be used for any of the conventional immobilized enzyme uses which are known per se.

Detailed Description Text (33):
In another embodiment of the present invention, the solid phase substrate may be formed into a medical implant or other medical device which contacts host tissues or fluids. The substrate may be made more compatible with host tissues or fluids by implanting substances in the same manner as used for binding assays. The choice of substances would be the same as are conventionally used to coat medical implants and devices for the same purpose. Since an embedded substance is expected to represent a tighter bond than simple coating, medical implants and devices may be superior and perhaps more economical to manufacture.

Detailed Description Text (34):
An example of a preferred medical implant is an arterial prosthesis containing Dacron polyester as the solid phase and containing phospholipids embedded therein. Cholesterol, heparin/heparan, glucosaminoglycans, complement inactivating proteins and other components may also be embedded. Likewise, polyurethane may be substituted for Dacron, particularly with other types of medical prosthesis. Other medical devices, tubes, blood bags etc, may be likewise embedded with naturalizing substances to make the device more compatible.

Detailed Description Text (42):
5) Allow reuse of plastic ware for additional tests and/or procedures. Other benefits of this technology are the manufacture of antigen impregnated plastic beads for affinity purification of specific antibodies and PL-binding plasma proteins or receptors. The inclusion of PL in plastics used for medical devices, for example, artificial valves and vessel grafts would provide a more natural or biological surface, i.e. less thrombogenic, for contact by body fluids.

L2: Entry 33 of 62 File: USPT Jun 27, 2000

DOCUMENT-IDENTIFIER: US 6081736 A
TITLE: Implantable enzyme-based monitoring systems adapted for long term use

Brief Summary Text (8):
The sensor assembly employed in many enzyme-based glucose monitoring systems has three basic components: an electrode assembly; an immobilized enzyme (glucose oxidase); and one or more membranes isolating these parts from one another and from the sample to be measured. See, for example, U.S. Pat. No. 4,890,620, Gough, David, issued Jan. 2, 1990; U.S. Pat. No. 4,671,288, Gough, David, issued Jan. 9, 1987; and Fischer and Abel, "A Membrane Combination for Implantable Glucose Sensors. Measurements in Undiluted Biological Fluids", Trans. Am. Soc. Artif. Intern. Organs, 28:245-248 (1982), each of which is hereby incorporated by reference, in its entirety. In arranging these components, the electrode assembly may either be in direct contact with the immobilized enzyme or it may be, and preferably is, separated therefrom by a membrane. The enzyme is normally immobilized by being associated with a hydrophilic gelatinous layer composed, for example, of polyacrylamide gels, glutaraldehyde-cross-linked proteins or polyhydroxyethyl-methacrylate (PHEMA). Directly adjacent the immobilized enzyme is a hydrophobic membrane, impermeable to glucose. When contacted with the sample to be measured, oxygen diffuses into the hydrophobic outer layer and the gelatinous enzyme layer and glucose diffuses only into the gelatinous enzyme layer, thereby preventing a deficit of oxygen, which could result in an inaccurate measurement of the glucose concentration.

Brief Summary Text (9):
Two particular areas of weakness in this sensor assembly configuration, that contribute to the short life of the implantable enzyme-based glucose monitoring systems, are the finite life of the solid, immobilized enzyme layer and the finite life of the electrode assembly. Once the enzyme layer is either expended by the enzymatic reaction or inactivated by prolonged exposure to body temperatures, the entire monitoring system must be explanted and replaced. Similarly, if the electrode assembly contained within the sensor assembly ceases to function properly, for example due to pH changes at the active surface of the electrodes which may be caused by corrosion of the electrodes, again, the entire monitoring system must be replaced. Further, before the electrode assembly completely wears out, the monitoring system may require frequent recalibration to account for the assembly's deterioration. Presently, the maximum life expectancy of such monitoring systems is approximately 18 to 24 months, with recalibration required every three to six months, meaning that every couple of years, the patient must undergo surgery to remove and replace the implanted monitoring system.

Brief Summary Text (11):
Thus, what is needed are implantable monitoring systems that may remain implanted for long periods of time and that provide reliable, accurate measurements over that period of time with infrequent or no recalibrations required. Further, the monitoring system should remain as small as possible in order to maximize its usefulness as an implantable medical device.

Detailed Description Text (25):
As illustrated in FIG. 1, in this preferred embodiment, an enzyme chamber 36 is

formed by the epoxy plug 40, located at the end of the elongated substrate 16 near the first working electrode 18; the hydrophobic oxygen permeable membrane means 34, filling the space between the first membrane means 26 over the remaining electrodes 20, 22, 24 and the housing 10; the first membrane means 26 over the first working electrode 18; and the housing 10 with opening 12 covered by membrane means 14. The enzyme is located within the enzyme chamber 36 and may be an immobilized enzyme solution, as known in the art, or may be a fluid enzyme solution, as described below, or both. Examples of immobilized enzyme solutions, particularly immobilized glucose oxidase solutions suitable for use in an implantable monitoring system, are described in U.S. Pat. No. 4,890,620, Gough, David; U.S. Pat. No. 4,671,288 Gough, David; U.S. Pat. No. 3,948,745, Guilbault, et al.; and U.S. Pat. No. 4,759,828 Young, et al., each of which is incorporated herein, in its entirety.

Detailed Description Text (26):
As stated above, in this preferred monitoring system embodiment, a microprocessor assembly is hermetically associated with the substrate. The microprocessor assembly comprises integrated circuits and microelectronics 30 used to process the electrical signals created at the electrodes and to process data received from the command center. The microprocessor assembly may be hermetically associated with the substrate by any of a number of known means by those of skill in the implantable medical device art. For example, the hermetic seal may be formed by braising a metal, such as stainless steel, lid or can 32 onto the substrate covering the microprocessor assembly. The can 32 may occupy nearly all of the space between the substrate 16, the housing 10 and the plugs 38, 40. If such is the case, then a dimple (not shown) may be formed in the can to permit passage of the enzyme solution about the can.

Detailed Description Text (35):
As discussed briefly above, methods of immobilization of the enzyme solution within the enzyme chamber are well known in the art. For example, the enzyme may be contained within or associated with a gelatinous material, such as polyacrylamide gels, glutaraldehyde, cross-linked collagen or albumin, polyhydroxyethylmethacrylate (PHEMA) and its derivative and other hydrophilic polymers and co-polymers. For the purposes herein, the term enzyme solution refers to gelatinous as well as fluid compounds comprising the enzyme of interest. Preferably, where a gelatinous enzyme is immobilized in the enzyme chamber, a fluid enzyme solution is contained within the enzyme reservoir and channels; thereby permitting the fluid enzyme solution to flow from the enzyme reservoir into the enzyme chamber as the gelatinous enzyme is expended.

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L2: Entry 39 of 62 File: USPT Nov 24, 1998

DOCUMENT-IDENTIFIER: US 5840190 A
TITLE: Surface modified biocompatible membranes

Brief Summary Text (3):
In recent years, great progress has been made in the development of medical devices for treatment of various disorders, and in the development of permanent implants to replace pans of the human body. When in use, many of these devices or implants have contact with blood for short periods of time or permanently.

Brief Summary Text (23):
In EPA-0090483 and EP 87 228 B2, a method for the surface modification of skinless, microporous polyamide membranes is described, where a surface modifying polymer of molecular weight above 20 000 with functional groups (amino, hydroxyl, carboxylic sulfonic acids or others) is added to the casting solution in proportions around 1% based on the weight of the polyamide resin. When the membrane is precipitated in a coagulation bath being a non-solvent for polyamide, the surface modifying polymer becomes an integral part of the membrane, mainly exposed on the surface of the membrane. The surface modifying polymer increases the hydrofilicity of the membrane and may give the membrane an unusual zeta-potential versus pH-profile. These properties allows for selective particle removal, eg negative particles can be removed by a positively charged membrane according to this patent. Other useful properties of these membranes are the ability to remove dissolved metal contaminants by complex formation, e.g. from liquids for recovery of precious metals in the plating industry, or after further modification of the modified membranes to impart affinity for certain biological compounds, in the processing of biological or biochemical preparations, such as in the removal or isolation of biological or pharmaceutical materials for preparation of substances in the pharmaceutical industry. Another application of these membranes are the immobilisation of enzymes for food processing or preparation of pharmaceuticals. The immobilised enzymes provides convenient ways of separating the enzyme from the product after reaction, as well as means for simultaneous removal of particular contaminants such as cell debris, a common contaminant in the commercial enzyme preparations.

Brief Summary Text (24):
In EP-0090483A and EP-087228B2, neither medical applications such as use in medical devices or implants, nor improved biocompatibility of the surface modified membranes are mentioned.

Brief Summary Text (34):
The invention can be used on any polymeric material used for medical devices that are prepared by casting, spinning or similar methods. Examples of such medical devices other than membrane-containing devices are implants such as vascular grafts, stents, pacemaker leads, sutures or implantable catheters or disposable articles such as various catheters, sensors or wound dressings.

L2: Entry 40 of 62 File: USPT Aug 4, 1998

DOCUMENT-IDENTIFIER: US 5788678 A
TITLE: Indwelling catheter with stable enzyme coating

Brief Summary Text (10):
In accordance with the invention, an improved indwelling catheter and related production method are provided, wherein the catheter includes a stable and substantially immobilized enzyme coating to prevent formation of and/or to dissolve occlusions along the catheter lumen. The enzyme coating comprises a selected fibrinolytic and/or lipolytic enzyme applied to the catheter, in combination with means for preventing or otherwise regulating proteolytic degradation in response to enzyme interaction with body fluids. The thus-protected enzyme exhibits relatively stable characteristics, with long-term effectiveness in the prevention and/or dissolution of catheter occlusions.

Detailed Description Text (2):
As shown in the exemplary drawings, an improved indwelling catheter referred to generally by the reference numeral 10 is provided for long-term infusion of medical fluids to a patient 12. The catheter 10 includes a stable, substantially immobilized enzyme-containing coating 14 as depicted, for example, in FIG. 6, for preventing and/or dissolving occlusions. Proteolytic and/or chemical hydrolysis between the enzyme coating and patient body fluids, which would otherwise result in rapid enzyme degradation and deactivation, is substantially prevented or otherwise controlled in a manner rendering the enzyme available for effective long-term occlusion control.

CLAIMS:

10. An in vivo medical device, comprising:

a substrate formed from a polymeric material and adapted for in vivo patient placement; and

at least one enzyme on at least a portion of the surface of said substrate, said enzyme being effective in the presence of patient body fluids to dissolve lipid-based occlusions on said substrate.

11. The medical device of claim 10 further including means for protecting said enzyme against short-term degradation upon contact with patient body fluids.

12. The medical device of claim 11 wherein said protecting means comprises time release capsules having the enzyme contained within an encapsulant shell of a material soluble in the presence of patient body fluids, said capsules having a variable shell thickness for dissolution in the presence of body fluids to expose the enzyme therein over an extended period of time.

13. The medical device of claim 10 wherein said at least one enzyme comprises a combination of fibrinolytic and lipolytic enzymes.

14. The medical device of claim 10 wherein said enzyme comprises phosphoslipase.

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L2: Entry 56 of 62 File: USPT Aug 8, 1989

US-PAT-NO: 4855234
DOCUMENT-IDENTIFIER: US 4855234 A
**** See image for Certificate of Correction ****

TITLE: Biologically active protein immobilized with a polymeric fibrous support

DATE-ISSUED: August 8, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE ZIP CODE COUNTRY
Hendrickson; Carol E.	St. Joseph Township, St. Croix County	WI
Uy; Rosa	St. Paul	MN
Mencke; Arlene J.	St. Paul	MN

US-CL-CURRENT: 435/181; 435/177, 435/180

CLAIMS:

We claim:

1. A composite article comprising in sequence:

(a) a polymeric fibrous support having a large surface area, which surface has been subjected to a surface plasma treatment carried out at a frequency of 10 to 125 kiloherz with a power density in the range of 0.05 to 2.25 w/cm.sup.2 generated between two electrodes in a gas at a pressure in the range of 10 mtorr to 10 torr to provide a polar surface having binding sites thereon,

(b) a layer of a protein immobilizer compound comprising a polymer or a silane-functional compound adhering to the resulting treated surface and capable of immobilizing enzymes, and

(c) an enzyme bound to said layer of protein immobilzer compound.

2. The article according to claim 1 wherein said plasma treatment utilizes a gas selected from the group consisting of air, oxygen, carbon dioxide, argon, helium, nitrous oxide, or water vapor.

3. The article according to claim 1 wherein said gas is air or carbon dioxide.

4. The article according to claim 1 wherein said support is woven or nonwoven.

5. The article according to claim 1 wherein said support is polyalkylene, polyvinyl chloride, polyamide, polyvinyl alcohol, polystyrene, polyacrylsulfone, polyester, polycarbonate, polyacrylate, cellulosic, polyurethane, or combinations thereof.

6. The article according to claim 1 wherein said polymer is a beta-hydroxyalkyleneamine-containing polymer, and the silane-functional compound is a silane-treated polycarbodiimide polymer.

7. The article according to claim 6 wherein said polymer is an amine adduct of epoxidized poly-cis-1,4-butadiene, epoxidized styrene/cis-1,4-butadiene, or polyglycidyl methacrylate.

8. The article according to claim 7 wherein said amine is dimethylamine, diethylamine, morpholine, piperidine, or n-propylamine.

9. The article according to claim 1 wherein said enzyme is urease, glucose oxidase, invertase, peroxidase, catalase, papain, lipase, cellulase, dextranase, amylase, ribonuclease, carboxypeptidase or urokinase.

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Search Results - Record(s) 61 through 62 of 62 returned.

☐ 61. Document ID: US 4373023 A

Using default format because multiple data bases are involved.

L2: Entry 61 of 62 File: USPT Feb 8, 1983

US-PAT-NO: 4373023
DOCUMENT-IDENTIFIER: US 4373023 A

TITLE: Process for neutralizing heparin

DATE-ISSUED: February 8, 1983

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Langer; Robert S.	Cambridge	MA		
Linhardt; Robert	Somerville	MA		
Cooney; Charles L.	Brookline	MA		
Galliher; Parrish M.	West Newton	MA		
Flanagan; Margaret M.	Somerset	MA		
Klein; Michael D.	Ann Arbor	MI		

US-CL-CURRENT: 435/2; 424/529, 424/94.3, 424/94.5, 435/178, 435/180

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 62. Document ID: EP 223479 A, AU 8664243 A, JP 62114557 A, US 4757014 A, US 4829001 A, US 4855234 A, CA 1261254 A, CA 1267617 A, EP 223479 B, DE 3683729 G

L2: Entry 62 of 62 File: DWPI May 27, 1987

DERWENT-ACC-NO: 1987-144798
DERWENT-WEEK: 199717

TITLE: Hydrogen peroxide disinfecting of medical devices - using immobilised protein, esp. enzyme, to decompose excess peroxide

INVENTOR: HENDRICKSO, C E; MENCKE, A J

PRIORITY-DATA: 1985US-0796274 (November 8, 1985), 1985US-0796272 (November 8, 1985)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC

EP 223479 A	May 27, 1987	E	018
AU 8664243 A	May 14, 1987		000
JP 62114557 A	May 26, 1987		000
US 4757014 A	July 12, 1988		010
US 4829001 A	May 9, 1989		011
US 4855234 A	August 8, 1989		000
CA 1261254 A	September 26, 1989		000
CA 1267617 A	April 10, 1990		000
EP 223479 B	January 29, 1992		000
DE 3683729 G	March 12, 1992		000

INT-CL (IPC): A01N 59/00; A61L 2/18; C07K 17/08; C12N 11/08; C12N 11/14; G01N 33/54

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. D

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Terms	Documents
(immobilized adj1 enzyme) and (medical adj1 device)	62

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Search Results - Record(s) 31 through 60 of 62 returned.

☐ 31. Document ID: US 6090901 A

Using default format because multiple data bases are involved.

L2: Entry 31 of 62 File: USPT Jul 18, 2000

US-PAT-NO: 6090901
DOCUMENT-IDENTIFIER: US 6090901 A

TITLE: Polymeric surface coatings

DATE-ISSUED: July 18, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick William Jonathon	Norfolk	VA		
Jones; Stephen Alister	Farnham			GB
Stratford; Peter William	Farnham			GB

US-CL-CURRENT: 526/277; 526/279, 526/287, 526/288, 526/307, 526/319, 526/320, 526/335, 526/347.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 32. Document ID: US 6087462 A

L2: Entry 32 of 62 File: USPT Jul 11, 2000

US-PAT-NO: 6087462
DOCUMENT-IDENTIFIER: US 6087462 A
** See image for Certificate of Correction **

TITLE: Polymeric surface coatings

DATE-ISSUED: July 11, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick W J	Middlesex			GB
Jones; Stephen A	Middlesex			GB
Stratford; Peter W	Middlesex			GB
Charles; Stephen A	Middlesex			GB

US-CL-CURRENT: 526/277; 526/278, 526/287, 526/288, 526/310, 526/312, 526/320, 526/328.5, 526/332, 526/347.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 33. Document ID: US 6081736 A

L2: Entry 33 of 62 File: USPT Jun 27, 2000

US-PAT-NO: 6081736
DOCUMENT-IDENTIFIER: US 6081736 A

TITLE: Implantable enzyme-based monitoring systems adapted for long term use

DATE-ISSUED: June 27, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Shah; Rajiv	Rancho Palos Verdes	CA		

US-CL-CURRENT: 600/377; 600/347, 600/365

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 34. Document ID: US 6042751 A

L2: Entry 34 of 62 File: USPT Mar 28, 2000

US-PAT-NO: 6042751
DOCUMENT-IDENTIFIER: US 6042751 A
**** See image for Certificate of Correction ****

TITLE: Thick film conductor composition for use in biosensors

DATE-ISSUED: March 28, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Kuty; Donald W.	Chapel Hill	NC		

US-CL-CURRENT: 252/511; 204/292, 204/294, 252/514, 430/212, 430/218

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 35. Document ID: US 6017496 A

L2: Entry 35 of 62 File: USPT Jan 25, 2000

US-PAT-NO: 6017496
DOCUMENT-IDENTIFIER: US 6017496 A

TITLE: Matrices with memories and uses thereof

DATE-ISSUED: January 25, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Santa Fe	CA		
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David; Gary S.	La Jolla	CA		
Satoda; Yozo	San Diego	CA		
Zhao; Chanfeng	San Diego	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 422/68.1; 422/102, 422/104, 422/107, 422/108, 422/50, 422/58, 422/99, 435/6, 435/7.1, 702/22

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 36. Document ID: US 5961923 A

L2: Entry 36 of 62 File: USPT Oct 5, 1999

US-PAT-NO: 5961923
DOCUMENT-IDENTIFIER: US 5961923 A

TITLE: Matrices with memories and uses thereof

DATE-ISSUED: October 5, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Parandoosh; Zahra	San Diego	CA		
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Xiao; Xiao-Yi	San Diego	CA		
David; Gary S.	La Jolla	CA		
Satoda; Yozo	San Diego	CA		
Zhao; Chanfeng	San Diego	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 422/68.1; 422/102, 422/104, 422/55, 422/57, 422/58, 422/82.05,

436/164, 436/165, 436/518, 436/524, 436/528, 436/531, 702/150, 702/19, 702/28

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 37. Document ID: US 5914367 A

L2: Entry 37 of 62 File: USPT Jun 22, 1999

US-PAT-NO: 5914367
DOCUMENT-IDENTIFIER: US 5914367 A
**** See image for Certificate of Correction ****

TITLE: Polymer protein composites and methods for their preparation and use

DATE-ISSUED: June 22, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dordick; Jonathan S.	Iowa City	IA		
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Sergeeva; Maria Vladimir	Tiffin	IA		
Novick; Scott Joel	Iowa City	IA		

US-CL-CURRENT: 525/54.1; 527/201, 527/202, 527/203

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 38. Document ID: US 5840338 A

L2: Entry 38 of 62 File: USPT Nov 24, 1998

US-PAT-NO: 5840338
DOCUMENT-IDENTIFIER: US 5840338 A

TITLE: Loading of biologically active solutes into polymer gels

DATE-ISSUED: November 24, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Roos; Eric J.	Grafton	MA	01519	
Schiller; Matthew E.	Waltham	MA	02154	

US-CL-CURRENT: 424/488; 424/484, 424/486, 424/487, 514/944, 516/99

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 39. Document ID: US 5840190 A

L2: Entry 39 of 62 File: USPT Nov 24, 1998

US-PAT-NO: 5840190
DOCUMENT-IDENTIFIER: US 5840190 A

TITLE: Surface modified biocompatible membranes

DATE-ISSUED: November 24, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Scholander; Elisabeth	Upsala			SE
Werynski; Andrzej	Warsaw			PL
Jozwiak; Andrzej	Warsaw			PL
Larm; Olle	Bromma			SE

US-CL-CURRENT: 210/500.24; 210/500.27, 210/500.29, 210/500.3, 210/500.41, 210/500.43, 264/4, 264/49

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 40. Document ID: US 5788678 A

L2: Entry 40 of 62 File: USPT Aug 4, 1998

US-PAT-NO: 5788678
DOCUMENT-IDENTIFIER: US 5788678 A

TITLE: Indwelling catheter with stable enzyme coating

DATE-ISSUED: August 4, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Van Antwerp; William P.	Westchester	CA		

US-CL-CURRENT: 604/265; 427/2.3, 604/266, 604/890.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 41. Document ID: US 5783650 A

L2: Entry 41 of 62 File: USPT Jul 21, 1998

US-PAT-NO: 5783650
DOCUMENT-IDENTIFIER: US 5783650 A
** See image for Certificate of Correction **

TITLE: Polymeric surface coatings

DATE-ISSUED: July 21, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick W. J.	Middlesex			GB
Jones; Stephen A.	Middlesex			GB
Stratford; Peter W.	Middlesex			GB
Charles; Stephen A.	Middlesex			GB

US-CL-CURRENT: 526/277; 526/278, 526/287, 526/288, 526/310, 526/312, 526/320, 526/328.5, 526/332, 526/347.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 42. Document ID: US 5770229 A

L2: Entry 42 of 62 File: USPT Jun 23, 1998

US-PAT-NO: 5770229
DOCUMENT-IDENTIFIER: US 5770229 A

TITLE: Medical polymer gel

DATE-ISSUED: June 23, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanihara; Masao	Kurashiki			JP
Kinoshita; Hisao	Ikoma			JP

US-CL-CURRENT: 424/488; 514/944, 516/102, 516/103

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 43. Document ID: US 5739236 A

L2: Entry 43 of 62 File: USPT Apr 14, 1998

US-PAT-NO: 5739236
DOCUMENT-IDENTIFIER: US 5739236 A
** See image for Certificate of Correction **

TITLE: Biocompatible zwitterion polymers

DATE-ISSUED: April 14, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick W. J.	Middlesex			GB
Jones; Stephen A.	Middlesex			GB

Stratford; Peter W.	Middlesex	GB

US-CL-CURRENT: 526/277; 526/245, 526/279, 526/303.1, 526/310, 526/314, 526/319, 526/320, 526/347.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 44. Document ID: US 5705583 A

L2: Entry 44 of 62 File: USPT Jan 6, 1998

US-PAT-NO: 5705583
DOCUMENT-IDENTIFIER: US 5705583 A
**** See image for Certificate of Correction ****

TITLE: Polymeric surface coatings

DATE-ISSUED: January 6, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick W. J.	Middlesex			GB
Jones; Stephen A.	Middlesex			GB
Stratford; Peter W.	Middlesex			GB
Charles; Stephen A.	Middlesex			GB

US-CL-CURRENT: 526/277; 427/407.1, 427/407.2, 427/409, 427/412.2, 526/279, 526/307, 526/307.1, 526/307.2, 526/310, 526/312, 526/328.5, 526/347, 526/347.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 45. Document ID: US 5668193 A

L2: Entry 45 of 62 File: USPT Sep 16, 1997

US-PAT-NO: 5668193
DOCUMENT-IDENTIFIER: US 5668193 A

TITLE: Solid substrate coated with an aminopolysaccharide

DATE-ISSUED: September 16, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gouda; Ibrahim	Sollentuna			SE
Larm; Olle	Bromma			SE

US-CL-CURRENT: 523/112; 210/500.24, 427/2.1, 427/2.24, 427/2.27, 427/2.31, 427/339, 427/419.7, 428/411.1, 428/421, 428/422, 428/423.1, 428/423.4, 428/425.3, 428/426, 428/436, 428/447, 428/448, 428/457, 428/458, 604/266

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 46. Document ID: US 5658592 A

L2: Entry 46 of 62 File: USPT Aug 19, 1997

US-PAT-NO: 5658592
DOCUMENT-IDENTIFIER: US 5658592 A

TITLE: Medical crosslinked polymer gel of carboxylic polysaccharide and diaminoalkane

DATE-ISSUED: August 19, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanihara; Masao	Kurashiki			JP
Kinoshita; Hisao	Ikoma			JP

US-CL-CURRENT: 424/488; 514/944, 516/102

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 47. Document ID: US 5648442 A

L2: Entry 47 of 62 File: USPT Jul 15, 1997

US-PAT-NO: 5648442
DOCUMENT-IDENTIFIER: US 5648442 A
** See image for Certificate of Correction **

TITLE: Polymeric surface coatings

DATE-ISSUED: July 15, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick W. J.	Middlesex			GB
Jones; Stephen A.	Middlesex			GB
Stratford; Peter W.	Middlesex			GB

US-CL-CURRENT: 526/277; 427/372.2, 427/383.1, 427/387, 427/388.5, 526/278, 526/310, 526/312, 526/328, 526/328.5

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 48. Document ID: US 5563056 A

L2: Entry 48 of 62 File: USPT Oct 8, 1996

US-PAT-NO: 5563056
DOCUMENT-IDENTIFIER: US 5563056 A
**** See image for Certificate of Correction ****

TITLE: Preparation of crosslinked matrices containing covalently immobilized chemical species and unbound releasable chemical species

DATE-ISSUED: October 8, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Swan; Dale G.	St. Louis Park	MN		
Josephson; Mark W.	Richfield	MN		
Swanson; Melvin J.	Carver	MN		

US-CL-CURRENT: 435/180; 424/486, 435/178, 435/179, 435/181, 435/182, 436/529, 436/531, 436/532, 436/535, 530/402, 530/813, 530/815, 530/816, 530/817, 536/123.1, 536/124

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 49. Document ID: US 5494756 A

L2: Entry 49 of 62 File: USPT Feb 27, 1996

US-PAT-NO: 5494756
DOCUMENT-IDENTIFIER: US 5494756 A

TITLE: Method for wet chemical surface modification of formed polysiloxane products and coated substrates silicones

DATE-ISSUED: February 27, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Siegel; Rolf	Wuerzburg			DE

US-CL-CURRENT: 428/447; 174/35R, 385/900, 424/443, 427/162, 427/2.11, 427/2.31, 427/58, 428/907, 528/482, 528/489

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 50. Document ID: US 5342693 A

L2: Entry 50 of 62 File: USPT Aug 30, 1994

US-PAT-NO: 5342693
DOCUMENT-IDENTIFIER: US 5342693 A
**** See image for Certificate of Correction ****

TITLE: Multifunctional thrombo-resistant coating and methods of manufacture

DATE-ISSUED: August 30, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Winters; Suzanne	Salt Lake City	UT		
Solen; Kenneth A.	Orem	UT		
Sanders; Clifton G.	Salt Lake City	UT		
Mortensen; J. D.	Sandy	UT		
Berry; Gaylord	Salt Lake City	UT		

US-CL-CURRENT: 428/447; 428/451, 523/112, 530/812, 530/815, 530/816

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 51. Document ID: US 5262451 A

L2: Entry 51 of 62 File: USPT Nov 16, 1993

US-PAT-NO: 5262451
DOCUMENT-IDENTIFIER: US 5262451 A
**** See image for Certificate of Correction ****

TITLE: Multifunctional thrombo-resistant coatings and methods of manufacture

DATE-ISSUED: November 16, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Winters; Suzanne	Salt Lake City	UT		
Solen; Kenneth A.	Orem	UT		
Sanders; Clifton G.	Salt Lake City	UT		
Mortensen; J. D.	Sandy	UT		
Berry; Gaylord	Salt Lake City	UT		

US-CL-CURRENT: 523/112; 530/812, 530/815, 530/816

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 52. Document ID: US 5258041 A

L2: Entry 52 of 62 File: USPT Nov 2, 1993

US-PAT-NO: 5258041
DOCUMENT-IDENTIFIER: US 5258041 A

TITLE: Method of biomolecule attachment to hydrophobic surfaces

DATE-ISSUED: November 2, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Guire; Patrick	Eden Prarie	MN		
Dunkirk; Shawn G.	Eden Prarie	MN		

US-CL-CURRENT: 435/181; 427/2.13, 427/2.25, 427/2.28, 427/2.3, 436/501, 604/266, 623/901, 623/920

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 53. Document ID: US 5217492 A

L2: Entry 53 of 62 File: USPT Jun 8, 1993

US-PAT-NO: 5217492
DOCUMENT-IDENTIFIER: US 5217492 A

TITLE: Biomolecule attachment to hydrophobic surfaces

DATE-ISSUED: June 8, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Guire; Patrick	Eden Prairie	MN		
Dunkirk; Shawn G.	Eden Prairie	MN		

US-CL-CURRENT: 600/36; 427/2.24, 427/2.25, 427/2.3, 435/181, 436/501, 604/266, 623/924

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 54. Document ID: US 5182317 A

L2: Entry 54 of 62 File: USPT Jan 26, 1993

US-PAT-NO: 5182317
DOCUMENT-IDENTIFIER: US 5182317 A
**** See image for Certificate of Correction ****

TITLE: Multifunctional thrombo-resistant coatings and methods of manufacture

DATE-ISSUED: January 26, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Winters; Suzanne	Salt Lake City	UT		
Solen; Kenneth A.	Orem	UT		
Sanders; Clifton G.	Salt Lake City	UT		
Mortensen; J. D.	Sandy	UT		
Berry; Gaylord	Salt Lake City	UT		

US-CL-CURRENT: 523/112; 523/113, 530/812, 530/815, 530/816, 604/266

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 55. Document ID: US 5002054 A

L2: Entry 55 of 62 File: USPT Mar 26, 1991

US-PAT-NO: 5002054
DOCUMENT-IDENTIFIER: US 5002054 A
** See image for Certificate of Correction **

TITLE: Interstitial filtration and collection device and method for long-term monitoring of physiological constituents of the body

DATE-ISSUED: March 26, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ash; Stephen R.	Lafayette	IN		
Janle; Elsa M.	West Lafayette	IN		

US-CL-CURRENT: 600/347; 600/581, 604/48

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 56. Document ID: US 4855234 A

L2: Entry 56 of 62 File: USPT Aug 8, 1989

US-PAT-NO: 4855234
DOCUMENT-IDENTIFIER: US 4855234 A
** See image for Certificate of Correction **

TITLE: Biologically active protein immobilized with a polymeric fibrous support

DATE-ISSUED: August 8, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hendrickson; Carol E.	St. Joseph Township, St. Croix County	WI		
Uy; Rosa	St. Paul	MN		
Mencke; Arlene J.	St. Paul	MN		

US-CL-CURRENT: 435/181; 435/177, 435/180

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 57. Document ID: US 4854322 A

L2: Entry 57 of 62 File: USPT Aug 8, 1989

US-PAT-NO: 4854322
DOCUMENT-IDENTIFIER: US 4854322 A
**** See image for Certificate of Correction ****

TITLE: Capillary filtration and collection device for long-term monitoring of blood constituents

DATE-ISSUED: August 8, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ash; Stephen R.	Lafayette	IN		
Janle-Swain; Elsa M.	West Lafayette	IN		

US-CL-CURRENT: 600/347; 600/581, 604/48

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 58. Document ID: US 4829001 A

L2: Entry 58 of 62 File: USPT May 9, 1989

US-PAT-NO: 4829001
DOCUMENT-IDENTIFIER: US 4829001 A

TITLE: Enzymatic neutralization of hydrogen peroxide

DATE-ISSUED: May 9, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mencke; Arlene J.	St. Paul	MN		
Hendrickson; Carol E.	St. Joseph Township, County of Croix	WI		
Uy; Rosa	St. Paul	MN		

US-CL-CURRENT: 435/264; 435/176, 435/177, 435/180

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 59. Document ID: US 4777953 A

L2: Entry 59 of 62 File: USPT Oct 18, 1988

US-PAT-NO: 4777953
DOCUMENT-IDENTIFIER: US 4777953 A
**** See image for Certificate of Correction ****

TITLE: Capillary filtration and collection method for long-term monitoring of blood constituents

DATE-ISSUED: October 18, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ash; Stephen R.	Lafayette	IN		
Janle-Swain; Elsa M.	West Lafayette	IN		

US-CL-CURRENT: 600/347; 600/573

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 60. Document ID: US 4757014 A

L2: Entry 60 of 62 File: USPT Jul 12, 1988

US-PAT-NO: 4757014
DOCUMENT-IDENTIFIER: US 4757014 A
**** See image for Certificate of Correction ****

TITLE: Immobilization of biologically active protein on a polymeric fibrous support

DATE-ISSUED: July 12, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hendrickson; Carol E.	St. Joseph Township, St. Croix County	WI		
Uy; Rosa	St. Paul	MN		
Mencke; Arlene J.	St. Paul	MN		

US-CL-CURRENT: 435/180; 435/176, 435/177, 436/524, 436/531, 530/811, 530/815

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

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Terms	Documents
(immobilized adj1 enzyme) and (medical adj1 device)	62

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☐ 1. Document ID: US 6762025 B2

Using default format because multiple data bases are involved.

L2: Entry 1 of 62 File: USPT Jul 13, 2004

US-PAT-NO: 6762025
DOCUMENT-IDENTIFIER: US 6762025 B2

TITLE: Single-molecule selection methods and compositions therefrom

DATE-ISSUED: July 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cubicciotti; Roger S.	Montclair	NJ		

US-CL-CURRENT: 435/6; 435/91.2, 536/22.1, 536/23.1, 536/24.3, 536/24.5

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw. Ds

☐ 2. Document ID: US 6743878 B2

L2: Entry 2 of 62 File: USPT Jun 1, 2004

US-PAT-NO: 6743878
DOCUMENT-IDENTIFIER: US 6743878 B2

TITLE: Polymeric surface coatings

DATE-ISSUED: June 1, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick William Jonathon	Norfolk	VA		
Jones; Stephen Alister	Farnham			GB
Stratford; Peter William	Farnham			GB

US-CL-CURRENT: 526/277; 427/407.1, 427/407.2, 427/409, 427/412.2, 526/279, 526/307, 526/307.1, 526/307.2, 526/310, 526/312, 526/328.5, 526/347, 526/347.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw. Ds

☐ 3. Document ID: US 6730144 B2

L2: Entry 3 of 62 File: USPT May 4, 2004

US-PAT-NO: 6730144
DOCUMENT-IDENTIFIER: US 6730144 B2

TITLE: Air purifying filter using modified enzymes

DATE-ISSUED: May 4, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Atsuo	Kyoto			JP
Gokano; Mikiko	Kanagawa			JP
Isomae; Kazuro	Kanagawa			JP

US-CL-CURRENT: 95/285; 422/28, 422/4, 435/176, 435/177, 435/181, 55/524, 55/527, 96/226

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 4. Document ID: US 6702857 B2

L2: Entry 4 of 62 File: USPT Mar 9, 2004

US-PAT-NO: 6702857
DOCUMENT-IDENTIFIER: US 6702857 B2

TITLE: Membrane for use with implantable devices

DATE-ISSUED: March 9, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Brauker; James H.	San Diego	CA		
Shults; Mark C.	Madison	WI		
Tapsak; Mark A.	San Diego	CA		

US-CL-CURRENT: 623/23.76; 424/424

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 5. Document ID: US 6686440 B2

L2: Entry 5 of 62 File: USPT Feb 3, 2004

US-PAT-NO: 6686440
DOCUMENT-IDENTIFIER: US 6686440 B2
**** See image for Certificate of Correction ****

TITLE: Comomer compositions for production of imide-containing polyamino acids

DATE-ISSUED: February 3, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Swift; Graham	Chapel Hill	NC		

US-CL-CURRENT: 528/363; 528/328

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 6. Document ID: US 6627058 B1

L2: Entry 6 of 62 File: USPT Sep 30, 2003

US-PAT-NO: 6627058
DOCUMENT-IDENTIFIER: US 6627058 B1

TITLE: Thick film conductor composition for use in biosensors

DATE-ISSUED: September 30, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chan; Man-Sheung	Chapel Hill	NC		

US-CL-CURRENT: 204/403.15; 204/294, 252/503, 419/32

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 7. Document ID: US 6617014 B1

L2: Entry 7 of 62 File: USPT Sep 9, 2003

US-PAT-NO: 6617014
DOCUMENT-IDENTIFIER: US 6617014 B1

TITLE: Foam composite

DATE-ISSUED: September 9, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thomson; Timothy	West Newbury	MA		

US-CL-CURRENT: 428/304.4; 428/305.5, 428/306.6, 428/308.4, 428/309.9, 428/315.7, 428/316.6, 428/319.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 8. Document ID: US 6599408 B1

L2: Entry 8 of 62 File: USPT Jul 29, 2003

US-PAT-NO: 6599408
DOCUMENT-IDENTIFIER: US 6599408 B1

TITLE: Thick film conductor composition for use in biosensors

DATE-ISSUED: July 29, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chan; Man-Sheung	Chapel Hill	NC		
Kuty; Donald W.	Chapel Hill	NC		

US-CL-CURRENT: 204/403.15; 204/291, 204/292, 204/293, 204/294, 204/403.01, 204/403.14, 204/416

Full | Title | Citation | Front | Review | Classification | Date | Reference | [illegible] | Claims | KWIC | Draw De

☐ 9. Document ID: US 6565509 B1

L2: Entry 9 of 62 File: USPT May 20, 2003

US-PAT-NO: 6565509
DOCUMENT-IDENTIFIER: US 6565509 B1
**** See image for Certificate of Correction ****

TITLE: Analyte monitoring device and methods of use

DATE-ISSUED: May 20, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Say; James	Alameda	CA		
Tomasco; Michael F.	Cupertino	CA		
Heller; Adam	Austin	TX		
Gal; Yoram	Kibbutz Yagur			IL
Aria; Behrad	Alameda	CA		
Heller; Ephraim	Oakland	CA		
Plante; Phillip John	Sunnyvale	CA		
Vreeke; Mark S.	Alameda	CA		
Friedman; Keith A.	Austin	TX		
Colman; Fredric C.	Berkeley	CA		

US-CL-CURRENT: 600/365; 600/345, 600/347

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 10. Document ID: US 6558321 B1

L2: Entry 10 of 62 File: USPT May 6, 2003

US-PAT-NO: 6558321
DOCUMENT-IDENTIFIER: US 6558321 B1

TITLE: Systems and methods for remote monitoring and modulation of medical devices

DATE-ISSUED: May 6, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Burd; John F.	San Diego	CA		
Jacobs; Peter G.	Portland	OR		
Sell; William J.	Petaluma	CA		
Shults; Mark C.	Madison	WI		

US-CL-CURRENT: 600/300

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 11. Document ID: US 6514734 B1

L2: Entry 11 of 62 File: USPT Feb 4, 2003

US-PAT-NO: 6514734
DOCUMENT-IDENTIFIER: US 6514734 B1

TITLE: Polybifunctional reagent having a polymeric backbone and latent reactive moieties and bioactive groups

DATE-ISSUED: February 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Clapper; David L.	Shorewood	MN		
Swanson; Melvin J.	Carver	MN		
Hu; Sheau-Ping	Falcon Heights	MN		
Amos; Richard A.	St. Anthony	MH		
Everson; Terrence P.	Eagan	MN		

US-CL-CURRENT: 435/180; 424/130.1, 424/184.1, 435/181, 435/395, 435/402, 436/531, 436/532, 514/2, 530/402, 530/815, 530/816

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 12. Document ID: US 6512939 B1

L2: Entry 12 of 62 File: USPT Jan 28, 2003

US-PAT-NO: 6512939
DOCUMENT-IDENTIFIER: US 6512939 B1
** See image for Certificate of Correction **

TITLE: Implantable enzyme-based monitoring systems adapted for long term use

DATE-ISSUED: January 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Colvin; Michael S.	Malibu	CA		
Schulman; Joseph H.	Santa Clarita	CA		
Canfield; Lyle Dean	Lake Hughes	CA		
Shah; Rajiv	Rancho Palos Verdes	CA		

US-CL-CURRENT: 600/347; 600/365, 600/377

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 13. Document ID: US 6495658 B2

L2: Entry 13 of 62 File: USPT Dec 17, 2002

US-PAT-NO: 6495658
DOCUMENT-IDENTIFIER: US 6495658 B2

TITLE: Comonomer compositions for production of imide-containing polyamino acids

DATE-ISSUED: December 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sikes; C. Steven	Birmingham	AL		
Ringsdorf; Lillian	Birmingham	AL		
Swift; Graham	Blue Bell	PA		

US-CL-CURRENT: 528/363; 528/328

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 14. Document ID: US 6468657 B1

L2: Entry 14 of 62 File: USPT Oct 22, 2002

US-PAT-NO: 6468657

DOCUMENT-IDENTIFIER: US 6468657 B1

TITLE: Controllable ion-exchange membranes

DATE-ISSUED: October 22, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hou; Zhizhong	Davis	CA		
Stroeve; Pieter	Davis	CA		
Abbott; Nicholas	Madison	WI		

US-CL-CURRENT: 428/403; 427/2.11, 427/2.14, 427/217, 427/220, 428/404, 428/407, 428/699, 428/701, 428/702, 435/287.9, 435/7.1, 435/7.7, 435/7.8, 435/7.9, 436/120, 436/127, 436/501, 436/72, 436/73, 436/80, 514/495, 514/499, 514/501, 514/706, 514/770

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 15. Document ID: US 6406897 B1

L2: Entry 15 of 62 File: USPT Jun 18, 2002

US-PAT-NO: 6406897
DOCUMENT-IDENTIFIER: US 6406897 B1

TITLE: Modified protein, method for preparation thereof and compositions for external application containing the modified protein

DATE-ISSUED: June 18, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kim; Mu Sung	Suwon			KR
Lee; Sung Gu	Suwon			KR
Kang; Byung Young	Seoul			KR
Lee; Dong Chul	Sungnam			KR

US-CL-CURRENT: 435/188; 424/94.3, 435/183, 435/184

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 16. Document ID: US 6395299 B1

L2: Entry 16 of 62 File: USPT May 28, 2002

US-PAT-NO: 6395299
DOCUMENT-IDENTIFIER: US 6395299 B1

TITLE: Matrices for drug delivery and methods for making and using the same

DATE-ISSUED: May 28, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Babich; John W.	Scituate	MA		
Zubieta; Jon	Syracuse	NY		
Bonavia; Grant	Kensington	MD		

US-CL-CURRENT: 424/484

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Claims | KWIC | Draw D

☐ 17. Document ID: US 6340588 B1

L2: Entry 17 of 62 File: USPT Jan 22, 2002

US-PAT-NO: 6340588
DOCUMENT-IDENTIFIER: US 6340588 B1

TITLE: Matrices with memories

DATE-ISSUED: January 22, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Potash; Hanan	Austin	TX		

US-CL-CURRENT: 435/287.1; 435/287.2, 435/288.1, 435/288.3, 435/288.4, 435/288.7, 530/300, 530/334, 530/350, 536/23.1, 536/24.3, 536/25.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 18. Document ID: US 6329139 B1

L2: Entry 18 of 62 File: USPT Dec 11, 2001

US-PAT-NO: 6329139
DOCUMENT-IDENTIFIER: US 6329139 B1

TITLE: Automated sorting system for matrices with memory

DATE-ISSUED: December 11, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Lillig; John E.	Alamo	CA		
Karunaratne; Kanchana Sanjaya Gunesekera	San Diego	CA		
Ewing; William	San Diego	CA		

Satoda; Yozo	San Diego	CA
Potash; Hanan	Austin	TX

US-CL-CURRENT: 435/6; 209/597, 209/604, 702/19, 702/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 19. Document ID: US 6319668 B1

L2: Entry 19 of 62 File: USPT Nov 20, 2001

US-PAT-NO: 6319668
DOCUMENT-IDENTIFIER: US 6319668 B1

TITLE: Method for tagging and screening molecules

DATE-ISSUED: November 20, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Potash; Hanan	La Jolla	CA		
Xiao; Xiao-Yi	San Diego	CA		
Parandoosh; Zahra	San Diego	CA		
David; Gary S.	La Jolla	CA		

US-CL-CURRENT: 435/6; 365/183, 435/287.2, 435/288.7, 435/7.1, 530/333, 530/334, 536/24.3, 536/25.3, 711/1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 20. Document ID: US 6291582 B1

L2: Entry 20 of 62 File: USPT Sep 18, 2001

US-PAT-NO: 6291582
DOCUMENT-IDENTIFIER: US 6291582 B1
**** See image for Certificate of Correction ****

TITLE: Polymer-protein composites and methods for their preparation and use

DATE-ISSUED: September 18, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dordick; Jonathan S.	Schenectady	NY		
Wang; Ping	Akron	OH		
Sergeeva; Maria Vladimir	San Diego	CA		
Novick; Scott Joel	Iowa City	IA		

US-CL-CURRENT: 525/54.1; 435/177, 435/180, 435/181, 435/182, 527/201, 527/202, 527/203, 530/402, 530/403, 530/812, 530/815, 530/816, 530/817

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 21. Document ID: US 6287765 B1

L2: Entry 21 of 62 File: USPT Sep 11, 2001

US-PAT-NO: 6287765
DOCUMENT-IDENTIFIER: US 6287765 B1

TITLE: Methods for detecting and identifying single molecules

DATE-ISSUED: September 11, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cubicciotti; Roger S.	Montclair	NJ		

US-CL-CURRENT: 435/6; 435/91.2, 536/22.1, 536/23.1, 536/24.3, 536/24.5

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 22. Document ID: US 6284854 B1

L2: Entry 22 of 62 File: USPT Sep 4, 2001

US-PAT-NO: 6284854
DOCUMENT-IDENTIFIER: US 6284854 B1

TITLE: Polymeric surface coatings

DATE-ISSUED: September 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick W. J.	Surrey			GB
Jones; Stephen A.	Surrey			GB
Stratford; Peter W.	Surrey			GB

US-CL-CURRENT: 526/288; 526/242, 526/243, 526/248, 526/253, 526/279, 526/287, 526/304, 526/310, 526/312, 526/327, 526/328.5

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 23. Document ID: US 6284459 B1

L2: Entry 23 of 62 File: USPT Sep 4, 2001

US-PAT-NO: 6284459
DOCUMENT-IDENTIFIER: US 6284459 B1

TITLE: Solid support matrices with memories and combinatorial libraries therefrom

DATE-ISSUED: September 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Senyei; Andrew E.	La Jolla	CA		
Xiao; Xiao-Yi	San Diego	CA		
Zhao; Chanfeng	San Diego	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 435/6; 422/68.1, 435/287.1, 435/287.2, 435/288.1, 435/288.3, 435/288.4, 435/7.1, 436/501, 436/519, 436/520, 436/527, 436/533, 436/534, 436/535, 530/350, 530/354

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 24. Document ID: US 6277489 B1

L2: Entry 24 of 62 File: USPT Aug 21, 2001

US-PAT-NO: 6277489
DOCUMENT-IDENTIFIER: US 6277489 B1

TITLE: Support for high performance affinity chromatography and other uses

DATE-ISSUED: August 21, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Abbott; Nicholas	Madison	WI		
Stroeve; Pieter	Davis	CA		
Dubrovsky; Timothy B.	Flemington	NJ		
Hou; Zhizhong	Davis	CA		

US-CL-CURRENT: 428/403; 427/217, 427/220, 428/404, 428/407, 428/450, 428/457, 428/699, 428/701, 428/702, 435/287.1, 435/287.2, 435/287.9, 435/7.1, 435/7.7, 435/7.8

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 25. Document ID: US 6254634 B1

L2: Entry 25 of 62 File: USPT Jul 3, 2001

US-PAT-NO: 6254634

DOCUMENT-IDENTIFIER: US 6254634 B1

TITLE: Coating compositions

DATE-ISSUED: July 3, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Anderson; Aron B.	Minnetonka	MN		
Chappa; Ralph A.	Prior Lake	MN		
Everson; Terrence P.	Eagan	MN		

US-CL-CURRENT: 623/1.42; 427/489, 623/23.59, 623/901

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 26. Document ID: US 6225431 B1

L2: Entry 26 of 62 File: USPT May 1, 2001

US-PAT-NO: 6225431
DOCUMENT-IDENTIFIER: US 6225431 B1

TITLE: Biocompatibilizing process

DATE-ISSUED: May 1, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowers; Roderick W J	Norfolk	VA		
Jones; Stephen	Middlesex			GB
Stratford; Peter William	Middlesex			GB

US-CL-CURRENT: 526/287; 427/384, 427/407.1, 523/105, 526/288, 526/310, 526/312, 526/319, 526/347

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 27. Document ID: US 6177282 B1

L2: Entry 27 of 62 File: USPT Jan 23, 2001

US-PAT-NO: 6177282
DOCUMENT-IDENTIFIER: US 6177282 B1

TITLE: Antigens embedded in thermoplastic

DATE-ISSUED: January 23, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McIntyre; John A.	Indianaopolis	IN	46220-5006	

US-CL-CURRENT: 436/518; 436/532, 436/533

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 28. Document ID: US 6175752 B1

L2: Entry 28 of 62 File: USPT Jan 16, 2001

US-PAT-NO: 6175752
DOCUMENT-IDENTIFIER: US 6175752 B1
**** See image for Certificate of Correction ****

TITLE: Analyte monitoring device and methods of use

DATE-ISSUED: January 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Say; James	Alameda	CA		
Tomasco; Michael F.	Cupertino	CA		
Heller; Adam	Austin	TX		
Gal; Yoram	Kibbutz Yagur			IL
Aria; Behrad	Alameda	CA		
Heller; Ephraim	Oakland	CA		
Plante; Phillip John	Sunnyvale	CA		
Vreeke; Mark S.	Alameda	CA		
Friedman; Keith A.	Austin	TX		
Colman; Fredric C.	Berkeley	CA		

US-CL-CURRENT: 600/345; 128/903, 600/365

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 29. Document ID: US 6121027 A

L2: Entry 29 of 62 File: USPT Sep 19, 2000

US-PAT-NO: 6121027
DOCUMENT-IDENTIFIER: US 6121027 A

TITLE: Polybifunctional reagent having a polymeric backbone and photoreactive moieties and bioactive groups

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Clapper; David L.	Shorewood	MN		
Swanson; Melvin J.	Carver	MN		
Hu; Sheau-Ping	Falcon Heights	MN		
Amos; Richard A.	St. Anthony	MN		
Everson; Terrence P.	Eagan	MN		

US-CL-CURRENT: 435/180; 424/130.1, 424/184.1, 435/181, 435/395, 435/402, 436/531, 436/532, 514/2, 530/402, 530/815, 530/816

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 30. Document ID: US 6100026 A

L2: Entry 30 of 62 File: USPT Aug 8, 2000

US-PAT-NO: 6100026
DOCUMENT-IDENTIFIER: US 6100026 A

TITLE: Matrices with memories and uses thereof

DATE-ISSUED: August 8, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Senyei; Andrew E.	La Jolla	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 435/6; 422/119, 422/58, 422/68.1, 435/287.1, 435/287.2, 435/288.1, 435/288.3, 435/7.1, 435/7.2, 435/7.3, 435/7.4

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Terms	Documents
(immobilized adj1 enzyme) and (medical adj1 device)	62

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L3: Entry 1 of 2 File: USPT May 28, 2002

DOCUMENT-IDENTIFIER: US 6395299 B1
TITLE: Matrices for drug delivery and methods for making and using the same

Drawing Description Text (6):
FIG. 5: Yield of immobilized enzyme in penicillinase-containing sol-gel matrices (observed activity was calculated as the percentage of enzyme activity used in the preparation of the matrices).

Detailed Description Text (212):
The encapsulation of reaction centers allows for the design of novel assays for reaction center activity. For example, a second reaction center may be encapsulated so as to help assay the activity of a first encapsulated reaction center. Yamanka et al. report encapsulating both oxalate oxidase and peroxidase. The peroxidase converts two dye precursors into a detectable dye using hydrogen peroxide, which is formed by oxalate oxidase from oxalate, water, and dioxygen. Yamanka et al. J. Sol-Gel Sci. & Tech. 7:117-21 (1996). Hence, the peroxidase in this sol-gel matrix assists in assaying the reaction kinetics of the oxalate oxidase. Yamanka et al. report that this enzyme system is useful as a diagnostic for the decreased secretion of oxalate in cases of hyperglycinemia, hypoclycinuria, and hyperoxaluria. Ngo et al. Anal. Biochem. 105:389 (1980).

Detailed Description Text (248):
Immobilized enzymes may be administered in a variety of ways. See generally Ming et al. Methods for Therapeutic Applications 46:676-699. The site of administration of the matrix may affect its therapeutic effect depending on the reaction center encapsulated therein. For example, the site of implantation of encapsulated PC12 cells for treatment of Parkinson's disease appears to affect the device output. Emerich et al. Cell Transplant. 5:589-96 (1996).

Detailed Description Text (251):
In other embodiments of the present invention, the matrices of the present invention may be associated with a medical article to be used as an implant. For example, matrices of the present invention could be attached as thin films to such devices. Alternatively, matrices of the present invention could be attached as a capsule or incorporated into any medical device. Exemplary structural medical articles include such implants as orthopedic fixation devices, ventricular shunts, laminates for degradable fabric, drug-carriers, burn dressings, coatings to be placed on other implant devices, and the like.

Other Reference Publication (52):
Klein and Langer; "Immobilized Enzymes in Clinical Medicine: An Emerging Approach to New Drug Therapies", TIBtech, 179-186 (Jul. 1986).

Other Reference Publication (102):
Yamanaka et al.; "Enzymatic Activity fo Oxalate Oxidase and Kinetic Measurements by Optical Methods in Transparent Sol-Gel Monoliths", Journal of Sol-Gel Science and Technology, 7: 117-121, (1996).

Other Reference Publication (110):
Chang, T.M. "Methods for the Therapeutic Applications of Immobilized Enzymes",

Methods Enzymol., 44: 676-698 (1976).

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L3: Entry 2 of 2 File: USPT Jan 22, 2002

DOCUMENT-IDENTIFIER: US 6340588 B1
TITLE: Matrices with memories

Detailed Description Text (113):
Numerous methods have been developed for the immobilization of proteins and other biomolecules onto solid or liquid supports [see, e.g., Mosbach (1976) Methods in Enzymology 44; Weetall (1975) Immobilized Enzymes, Antigens, Antibodies, and Peptides; and Kennedy et al. (1983) Solid Phase Biochemistry, Analytical and Synthetic Aspects, Scouten, ed., pp. 253-391; see, generally, Affinity Techniques, Enzyme Purification: Part B. Methods in Enzymology, Vol. 34, ed. W. B. Jakoby, M. Wilchek, Acad. Press, N.Y. (1974); Immobilized Biochemicals and Affinity Chromatography, Advances in Experimental Medicine and Biology, vol. 42, ed. R. Dunlap, Plenum Press, N.Y. (1974)].

Detailed Description Text (139):
If needed, segregation of the binding and information surfaces can be achieved by coating portions of the OMD with films formed from a dielectric material such as polyethylene, MYLAR, TEFLON.RTM., KAPTON, polycarbonate, or, preferably, the para-xylylene polymers sold under the trade name Parylene [see, e.g., U.S. Pat. Nos. 3,288,728, 3,342,754 and 3,429,739], or any other such materials that are commonly used in the electronics industry to passivate electronic components and circuit boards, and as a coating for medical devices, especially implants, catheters, probes and needles. [Parylene is the trade name for members of a series of polymers which are commercially available from Specialty Coating Systems, Inc., of Indianapolis, Ind. and originally from Union Carbide Corporation, Greenville, S.C., see, U.S. Pat. Nos. 3,288,728, 3,342,754 and Gorham 3,429,739; see, also brochures distributed by the manufacturer, entitled "Parylene Conformal Coatings Specifications and Properties" (.COPYRGT.1984, Specialty Coating Systems, Inc.), and "Parylene, A Biostable Coating for Medical Applications" (.COPYRGT.1984, Specialty Coating Systems, Inc.]. These polymers provide a conformal biostable coating which electrically and chemically isolates the protected surface from its environment.

Detailed Description Text (739):
Other types of photosensors similarly may be encapsulated in a sol-gel shell coating the electronic "capsule" for providing sensors for detecting other chemicals. The chemicals which may be detected include dissolved oxygen (O.sub.2) and carbon monoxide (CO.sub.2), using hemoglobin (Hb) or myoglobin (Mb) encapsulated in the sol-gel, both of which reversibly bind O2 to generate direct optical emission at 436 nm. The response time of the reaction is about one minute, and the sensor is stable for a few days. Dissolved nitric oxide (NO) can be optically detected using manganese myoglobin (MnMb). The presence of NO causes a sol-gel matrix containing the manganese myoglobin to emit light at 436 nm. This sensor is also stable for a few days. Dye-mediated detection of glucose and oxalate can be performed using the glucose oxidase and oxalate oxidase, respectively, with an enzyme co-factor (NADH), also encapsulated within the sol-gel. A glucose detector so constructed emits light at 510 nm and the oxalate detector emits light at 590 nm. Both of these sensors are stable over several months.

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☐	L7	L2 and (nitric adj2 synthetase)	0
☐	L6	L2 and (nitric adj2 synthase)	0
☐	L5	L2 and (NO adj2 synthase)	0
☐	L4	L2 and (NO or nitric)	61
☐	L3	L2 and oxalate	2
☐	L2	(immobilized adj1 enzyme) and (medical adj1 device)	62
☐	L1	(immobilized adj1 enzyme) same (medical adj1 device)	0

END OF SEARCH HISTORY